

**WHAT IS CLAIMED IS:**

- 1        1. An isolated nucleic acid of any one of (a) to (d) below:
  - 2            (a) a nucleic acid encoding a protein comprising the amino acid sequence of any  
3 one of SEQ ID NOs:2, 4 or 17,
  - 4            (b) a nucleic acid comprising a coding region in the nucleotide sequence of any  
5 one of SEQ ID NOs:1, 3 or 16,
  - 6            (c) a nucleic acid encoding a protein that comprises the amino acid sequence  
7 of any one of SEQ ID NOs:2, 4 or 17, in which one or more amino acids are replaced,  
8 deleted, inserted and/or added and that is functionally equivalent to the protein comprising  
9 the amino acid sequence of any one of SEQ ID NOs:2, 4 or 17, and
  - 10          (d) a nucleic acid that hybridizes under stringent conditions with the nucleic acid  
11 comprising the nucleotide sequence of any one of SEQ ID NOs:1, 3 or 16, and that encodes a  
12 protein functionally equivalent to the protein comprising the amino acid sequence of any one  
13 of SEQ ID NOs:2, 4 or 17.
- 1        2. An isolated nucleic acid encoding the amino acid sequence of any one of  
2 SEQ ID NOs:2, 4 or 17 or a fragment thereof.
- 1        3. A vector into which the nucleic acid of claim 1 is inserted.
- 1        4. A vector into which the nucleic acid of claim 2 is inserted.
- 1        5. A transformant harboring the nucleic acid of claim 1.
- 1        6. A transformant harboring the nucleic acid of claim 2.
- 1        7. A transformant harboring the vector of claim 3.
- 1        8. A transformant harboring the vector of claim 4.
- 1        9. A substantially purified polypeptide encoded by the nucleic acid of claim 1.
- 1        10. A substantially purified polypeptide encoded by the nucleic acid of claim 2.

1        11. A method for producing a polypeptide, the method comprising the steps of  
2 culturing the transformant of claim 5 and recovering a polypeptide expressed from the  
3 transformant or the culture supernatant thereof.

1        12. A method for producing a polypeptide, the method comprising the steps of  
2 culturing the transformant of claim 6 and recovering a polypeptide expressed from the  
3 transformant or the culture supernatant thereof.

1        13. A method for screening for a compound that binds to a polypeptide, the  
2 method comprising the steps of:

3            (a) contacting a test sample with the polypeptide of claim 9 or a partial peptide  
4 thereof,

5            (b) detecting a binding activity of the test sample to the polypeptide or the partial  
6 peptide thereof, and

7            (c) selecting a compound comprising the binding activity to the polypeptide or  
8 the partial peptide thereof.

1        14. A method for screening for a compound that binds to a polypeptide, the  
2 method comprising the steps of:

3            (a) contacting a test sample with the polypeptide of claim 10 or a partial peptide  
4 thereof,

5            (b) detecting a binding activity of the test sample to the polypeptide or the partial  
6 peptide thereof, and

7            (c) selecting a compound comprising the binding activity to the polypeptide or  
8 the partial peptide thereof.

1        15. An antibody against the polypeptide of claim 9.

1        16. An antibody against the polypeptide of claim 10.

1        17. A method of detecting a hemopoietin receptor protein in a test sample,  
2 comprising the steps of: contacting a test sample with the antibody of claim 15; and detecting

3       the presence of an immune complex between the antibody and a hemopoietin receptor  
4       protein in the test sample.

1           18.      A method of detecting a hemopoietin receptor protein in a test sample,  
2       comprising the steps of: contacting a test sample with the antibody of claim 16; and detecting  
3       the presence of an immune complex between the antibody and a hemopoietin receptor  
4       protein in the test sample.

1           19.      A polynucleotide that hybridizes with the nucleic acid comprising the  
2       nucleotide sequence of any one of SEQ ID NOS:1, 3 or 16 or the complementary strand  
3       thereof and that comprises at least 15 nucleotides.

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